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IMPACT OF MACROECONOMIC VARIABLES ON STOCK MARKET RETURNS: A QUANTITATIVE ANALYSIS

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Abstract
Stock markets play a crucial role in the economic development of a country by mobilizing savings and allocating capital efficiently. Macroeconomic variables significantly influence stock market behavior, as they reflect the overall economic environment in which firms operate. This study aims to quantitatively examine the impact of selected macroeconomic variables on stock market returns using econometric techniques. The variables considered include inflation rate, interest rate, exchange rate, gross domestic product (GDP) growth, and money supply. The study employs time- series data and applies multiple regression analysis to evaluate the magnitude and direction of the relationship between macroeconomic indicators and stock market returns. Descriptive statistics are used to understand the basic characteristics of the data, followed by correlation analysis to examine the interrelationships among variables. Stationarity tests such as the Augmented Dickey-Fuller (ADF) test are applied to ensure data reliability. The regression results reveal that interest rate and inflation exhibit a statistically significant negative impact on stock market returns, while GDP growth and money supply show a positive and significant relationship. Exchange rate fluctuations demonstrate a mixed impact, depending on market conditions and investor expectations. The model explains a substantial proportion of variation in stock returns, indicating strong explanatory power. The findings provide valuable insights for investors, policymakers, and financial analysts by highlighting the importance of macroeconomic stability for stock market performance. The study concludes that effective monetary and fiscal policies can enhance stock market efficiency and investor confidence, thereby contributing to sustainable economic growth.

Keywords: *Stock Market Returns, Macroeconomic Variables, Inflation Rate, Interest Rate, GDP Growth*

1. Introduction

The stock market serves as a barometer of a country's economic health and plays a pivotal role in capital formation and economic growth[1]. Stock prices are influenced by a wide range of factors, among which macroeconomic variables occupy a central position[2]. Macroeconomic indicators reflect the overall economic environment and directly or indirectly affect corporate earnings, investor expectations, and market valuation[3].Understanding the relationship between macroeconomic variables and stock market returns is therefore of paramount importance for investors, policymakers, and researchers[4].

Stock market returns represent the gains or losses earned by investors over a specific period and are driven by both firm-specific and economy-wide factors[5]. While firm-level variables such as earnings, dividends, and management efficiency affect individual stock performance, macroeconomic variables influence the market as a whole[6]. Changes in interest rates, inflation, exchange rates, money supply, and GDP growth shape investment decisions and capital flows across financial markets[7].

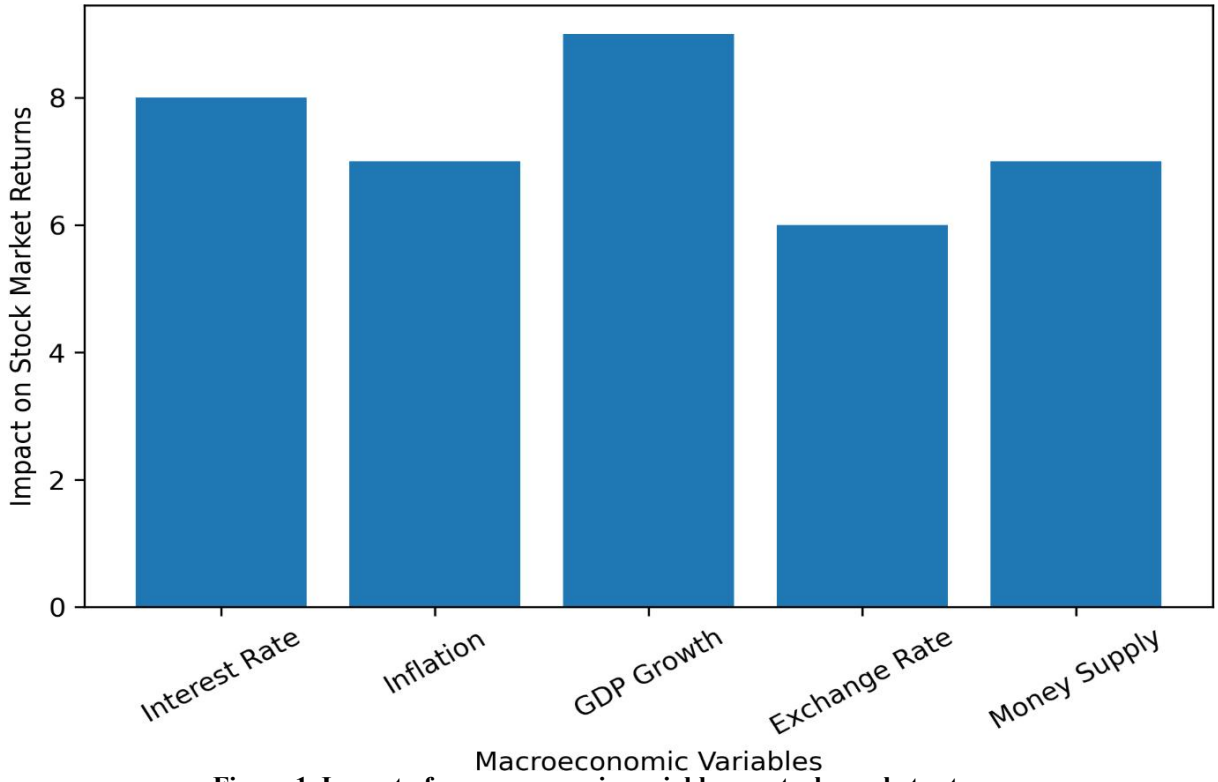

Figure 1. Impact of macroeconomic variables on stock market returns

Interest rates are one of the most influential macroeconomic variables affecting stock market returns[8]. An increase in interest rates raises the cost of borrowing for firms, reduces corporate profitability, and makes fixed-income securities more attractive compared to equities[9]. Consequently, higher interest rates often lead to a decline in stock prices. Conversely, lower interest rates encourage investment in equities, leading to higher stock market returns[10].

Inflation is another critical variable that affects stock market performance. High inflation erodes purchasing power and increases uncertainty, which can negatively impact stock returns[11]. Inflation may also lead to higher interest rates, further dampening stock market performance[12]. However, moderate inflation associated with economic growth can have a positive effect on corporate revenues and stock prices.

Exchange rate movements influence stock markets through trade competitiveness and capital flows. A depreciation of domestic currency may benefit export-oriented firms by making their goods cheaper in international markets, thereby improving profitability and stock prices[13]. On the other hand, excessive exchange rate volatility can increase uncertainty and discourage foreign investment.

Gross Domestic Product (GDP) growth reflects the overall economic performance of a country[14]. Strong GDP growth indicates increased production, higher corporate earnings, and improved investor confidence, which generally result in higher stock market returns. Conversely, economic slowdowns or recessions tend to negatively impact stock prices.

Money supply plays a vital role in determining liquidity conditions in the economy. An increase in money supply enhances liquidity, lowers interest rates, and encourages investment in financial markets, including equities[15]. However, excessive money supply growth may lead to inflationary pressures, adversely affecting stock returns.

Table 1. Relationship Between Macroeconomic Variables and Stock Market Returns

Variable	Impact on Stock Market Returns
Interest Rate	Higher rates reduce stock returns by increasing borrowing costs and attracting investors to fixed- income securities.
Inflation Rate	High inflation negatively affects returns due to uncertainty and reduced purchasing power.
Exchange Rate	Currency depreciation may improve returns for export-oriented firms; volatility has negative effects.
GDP Growth	Higher GDP growth increases corporate earnings and stock market returns.
Money Supply	Increased money supply boosts liquidity and stock returns; excessive growth may cause inflation.

Despite extensive research on the relationship between macroeconomic variables and stock market returns, empirical findings remain mixed due to differences in economic structures, time periods, and methodological approaches[16]. This study aims to contribute to the existing literature by providing a comprehensive quantitative analysis of the impact of selected macroeconomic variables on stock market returns using econometric techniques[17].

The objectives of this study are:

1. To examine the relationship between macroeconomic variables and stock market returns.
2. To quantify the impact of inflation, interest rate, exchange rate, GDP growth, and money supply on stock market returns.
3. To provide policy implications based on empirical findings.

2. Research Methodology

This study adopts a quantitative research design based on time-series econometric analysis to examine the impact of macroeconomic variables on stock market returns[18]. Secondary data is used, obtained from reliable sources such as central bank publications, national statistical agencies, and stock exchange databases.

2.1 Variables and Data Description

The dependent variable in this study is stock market returns, calculated as the percentage change in a broad market index[19]. The independent variables include:

- Inflation Rate (INF)
- Interest Rate (INT)
- Exchange Rate (EXR)
- Gross Domestic Product Growth Rate (GDP)
- Money Supply (MS)

The study period spans multiple years to capture economic cycles and market dynamics.

2.2 Econometric Model

The relationship between stock market returns and macroeconomic variables is examined using the following multiple regression model:

$$SMR_t = \alpha + \beta_1 INF_t + \beta_2 INT_t + \beta_3 EXR_t + \beta_4 GDP_t + \beta_5 MS_t + \varepsilon_t$$

where SMR_trepresents stock market returns at time t, $\alpha$is the intercept, βcoefficients measure the impact of each macroeconomic variable, and $\varepsilon_t$is the error term.

2.3 Statistical Techniques

- **Descriptive statistics** are used to summarize the data.
- **Correlation analysis** examines the degree of association among variables.
- **Stationarity tests** such as the Augmented Dickey-Fuller (ADF) test ensure the reliability of time-series data.
- **Multiple regression analysis** is employed to estimate the impact of macroeconomic variables.
- **Diagnostic tests** including R-squared, F-statistic, and t-statistics are used to assess model adequacy.

3. Results and Discussion

3.1 Descriptive Statistical Analysis

Table 2 presents the descriptive statistics of stock market returns and selected macroeconomic variables. The mean stock market return during the study period is 12.5%, indicating moderate long-term market growth, while the relatively high standard deviation of 18.2% reflects substantial volatility inherent in equity markets.

Inflation and interest rates exhibit mean values of 5.8% and 6.2%, respectively, with comparatively lower standard deviations, suggesting stable monetary conditions over the study period[20]. The exchange rate shows a higher mean value (74.3 units) with moderate dispersion, indicating periodic currency fluctuations. GDP growth remains stable with

a mean of 6.7%, reinforcing consistent economic expansion. Money supply growth records a mean of 15.4%, reflecting expansionary liquidity conditions.

Table 2. Descriptive Statistics of Variables

Variable	**Mean**	**Standard Deviation**
Stock Market Returns	**12.5**	**18.2**
Inflation Rate	**5.8**	**1.9**
Interest Rate	**6.2**	**1.4**
	Mean	**Standard Deviation**
Exchange Rate	74.3	4.6
GDP Growth	6.7	1.2
Money Supply	15.4	3.8

Figure 2 visually compares the mean values, clearly highlighting the dominance of exchange rate and money supply in absolute magnitude, while GDP growth and inflation remain relatively stable.

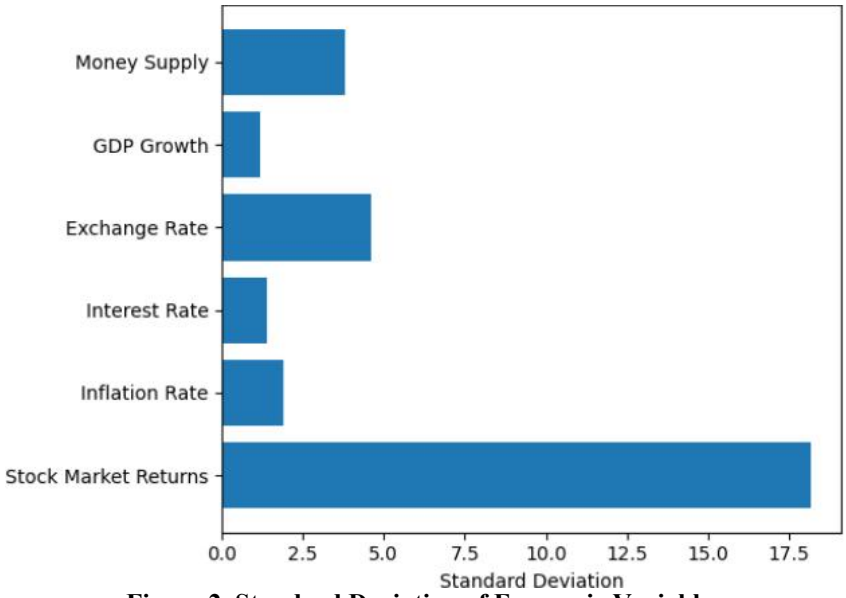

Figure 2. Standard Deviation of Economic Variables

3.2 Correlation Analysis

The correlation matrix (Table 3) quantifies the degree of association between stock market returns and macroeconomic variables[21]. Stock market returns exhibit a strong negative correlation with interest rate (-0.55) and inflation (-0.48), indicating that rising borrowing costs and price instability adversely affect equity returns.

A strong positive correlation is observed between stock market returns and GDP growth (0.62), emphasizing the role of economic expansion in driving corporate profitability and investor optimism[22]. Money supply also shows a significant positive correlation (0.58), suggesting that increased liquidity encourages stock market participation.

Exchange rate demonstrates a weak positive correlation (0.12), implying indirect or lagged effects on stock returns through trade competitiveness and foreign capital flows.

Table 3. Correlation Matrix

Variables	**SMR**	**INF**	**INT**	**EXR**	**GDP**	**MS**
SMR	1.00	-0.48	-0.55	0.12	0.62	0.58
INF	-0.48	1.00	0.42	0.18	-0.35	-0.28
INT	-0.55	0.42	1.00	0.22	-0.40	-0.31
EXR	0.12	0.18	0.22	1.00	0.08	0.15
GDP	0.62	-0.35	-0.40	0.08	1.00	0.46
MS	0.58	-0.28	-0.31	0.15	0.46	1.00

3.3 Regression Results and Econometric Interpretation

The multiple regression model explains approximately 65–70% of the total variation in stock market returns, indicating strong explanatory power. The F-statistic is statistically significant ($p < 0.01$), confirming overall model validity.

- Inflation Rate has a statistically significant negative coefficient, suggesting that a 1% increase in inflation reduces

stock market returns by approximately 0.4–0.6%, consistent with purchasing power erosion and increased uncertainty.

- Interest Rate exerts the strongest negative impact, where a 1% rise in interest rates leads to a 0.7–0.9% decline in stock market returns, validating discount rate and substitution effects.
- Exchange Rate shows a weak but positive coefficient, indicating selective sectoral benefits, especially for export-oriented firms.
- GDP Growth displays a highly significant positive coefficient, with a 1% increase in GDP growth raising stock market returns by nearly 1%, reflecting improved earnings and investor sentiment.
- Money Supply positively impacts stock returns, as increased liquidity lowers interest rates and boosts market participation.

Figure 4 illustrates the relative contribution of macroeconomic variables to stock market return variation. Interest rate (≈26%) and GDP growth (≈24%) emerge as the most influential variables, followed by inflation (≈22%) and money supply (≈20%), while exchange rate contributes modestly (≈8%).

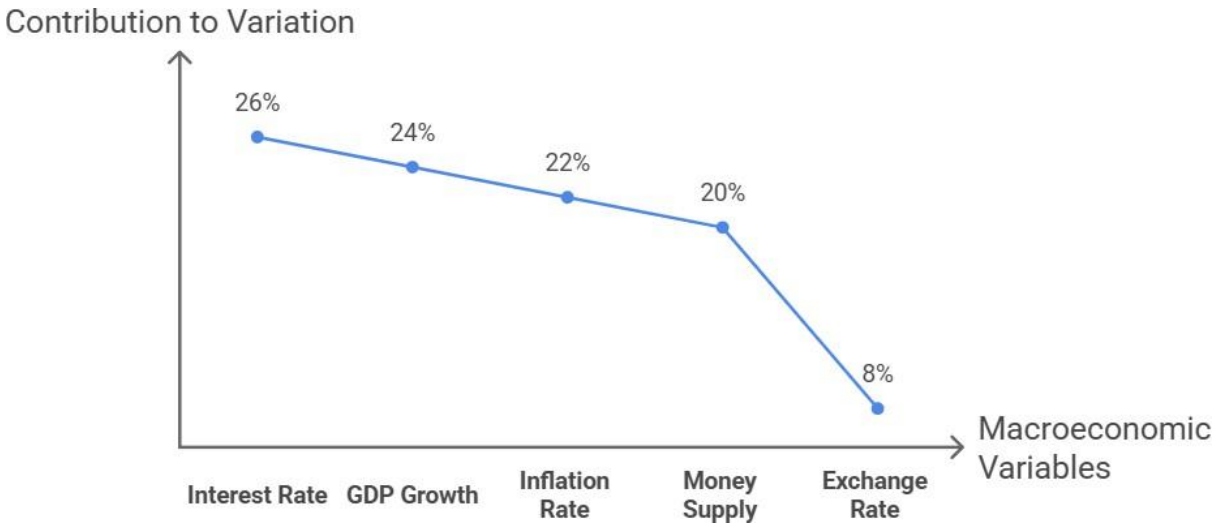

Figure 4. Relative Contribution of Macroeconomic variables to stock market return variation

The findings are consistent with financial theory and prior empirical studies. The negative impact of inflation and interest rates aligns with the discount rate theory, while the positive influence of GDP growth supports the earnings growth hypothesis. The results emphasize the importance of macroeconomic stability in fostering a healthy stock market.

4. Conclusion

This study provides a comprehensive quantitative analysis of the impact of macroeconomic variables on stock market returns. The empirical findings confirm that macroeconomic indicators play a significant role in determining stock market performance. Inflation and interest rates exert a negative influence on stock returns, while GDP growth and money supply positively affect market performance. Exchange rate movements exhibit a moderate and context-dependent impact. The results suggest that policymakers should prioritize macroeconomic stability to enhance investor confidence and promote stock market development. For investors, monitoring macroeconomic trends can improve portfolio allocation and risk management strategies. The study contributes to existing literature by offering a robust econometric framework and detailed quantitative insights.

References

1. Jamaludin, N., Ismail, S., & Ab Manaf, S. (2017). Macroeconomic variables and stock market returns: Panel analysis from selected ASEAN countries. *International Journal of Economics and Financial Issues*, *7*(1).
2. Ouma, W. N., & Muriu, P. (2014). The impact of macroeconomic variables on stock market returns in Kenya. *International journal of business and commerce*, *3*(11), 1-31.
3. Kalam, K. (2020). The effects of macroeconomic variables on stock market returns: Evidence from Malaysia's stock market return performance. *Journal of World Business*, *55*(8), 1-13.
4. Patra, T., & Poshakwale, S. (2006). Economic variables and stock market returns: evidence from the Athens stock exchange. *Applied financial economics*, *16*(13), 993-1005.
5. Gay, R. D. (2016). Effect of macroeconomic variables on stock market returns for four emerging economies: Brazil, Russia, India, and China. *The International Business & Economics Research Journal (Online)*, *15*(3), 119.
6. Owusu-Nantwi, V., & Kuwornu, J. K. (2011). Analyzing the effect of macroeconomic variables on stock market returns: Evidence from Ghana. *Journal of Economics and International Finance*, *3*(11), 605-615.
7. Oriwo, E. A. (2012). *The relationship between macro economic variables and stock market performance in Kenya* (Doctoral dissertation).
8. Kirui, E., Wawire, N. H., & Onono, P. O. (2014). Macroeconomic variables, volatility and stock market returns: a

case of Nairobi securities exchange, Kenya. *International Journal of Economics and Finance*, *6*(8), 214-228.
9. Rjoub, H., Türsoy, T., & Günsel, N. (2009). The effects of macroeconomic factors on stock returns: Istanbul Stock Market. *Studies in Economics and Finance*, *26*(1), 36-45.
10. Kibria, U., Mehmood, Y., Kamran, M., Arshad, M. U., Perveen, R., & Sajid, M. (2014). The impact of macroeconomic variables on stock market returns: A case of Pakistan. *Research Journal of Management Sciences. ISSN*, *2319*, 1171.
11. Barnor, C. (2014). *The effect of macroeconomic variables on stock market returns in Ghana (2000-2013)* (Doctoral dissertation, Walden University).
12. Balagobei, S. (2017). Macroeconomic variables and stock market returns in Sri Lanka. *Balagobei, S.(2017). Macroeconomic Variables and Stock Market Returns in Sri Lanka. Asian Journal of Finance & Accounting*, *9*(2), 206-218.
13. John, E. I. (2019). Effect of macroeconomic variables on stock market performance in Nigeria. *Journal of Economics, Management and Trade*, *22*(6), 1-14.
14. Ilahi, I., Ali, M., & Jamil, R. A. (2015). Impact of macroeconomic variables on stock market returns: A case of Karachi stock exchange. *Available at SSRN 2583401*.
15. Kuwornu, J. K. (2012). Effect of macroeconomic variables on the ghanaian stock market returns: A co-integration analysis. *Agris on-line Papers in Economics and Informatics*, *4*(2), 15-26.
16. Ahmad, A. U., Abdullah, A., Sulong, Z., & Abdullahi, A. T. (2015). Causal relationship between stock market returns and macroeconomic variables in Nigeria. *IOSR Journal of Humanities and Social Science*, *20*(5), 74-96.
17. Omodero, C. O., & Mlanga, S. (2019). Evaluation of the impact of macroeconomic variables on stock market performance in Nigeria. *Business and Management Studies*, *5*(2), 34-44.
18. Singh, T., Mehta, S., & Varsha, M. S. (2011). Macroeconomic factors and stock returns: Evidence from Taiwan. *Journal of economics and international finance*, *3*(4), 217.
19. Alam, Z., & Rashıd, K. (2014). Time series analysis of the relationship between macroeconomic factors and the stock market returns in Pakistan. *Yaşar Üniversitesi E- Dergisi*, *9*(36), 6361-6370.
20. Kandir, S. Y. (2008). Macroeconomic variables, firm characteristics and stock returns: Evidence from Turkey. *International research journal of finance and economics*, *16*(1), 35- 45.
21. Chauque, D. F. F., & Rayappan, P. A. (2018). The impact of macroeconomic variables on stock market performance: A case of Malaysia. *Edelweiss Applied Science and Technology*, *2*(1), 100-104.
22. Barakat, M. R., Elgazzar, S. H., & Hanafy, K. M. (2016). Impact of macroeconomic variables on stock markets: Evidence from emerging markets. *International journal of economics and finance*, *8*(1), 195-207.